



Newsletter for September 2022

Introducing: Resources for Gender Affirmation

By Zennith | September 25, 2022

We're extremely excited to present - [Resources for Gender Affirmation](#), an entirely new area of our website that focuses on what people seeking affirmation of their gender identities can do today.

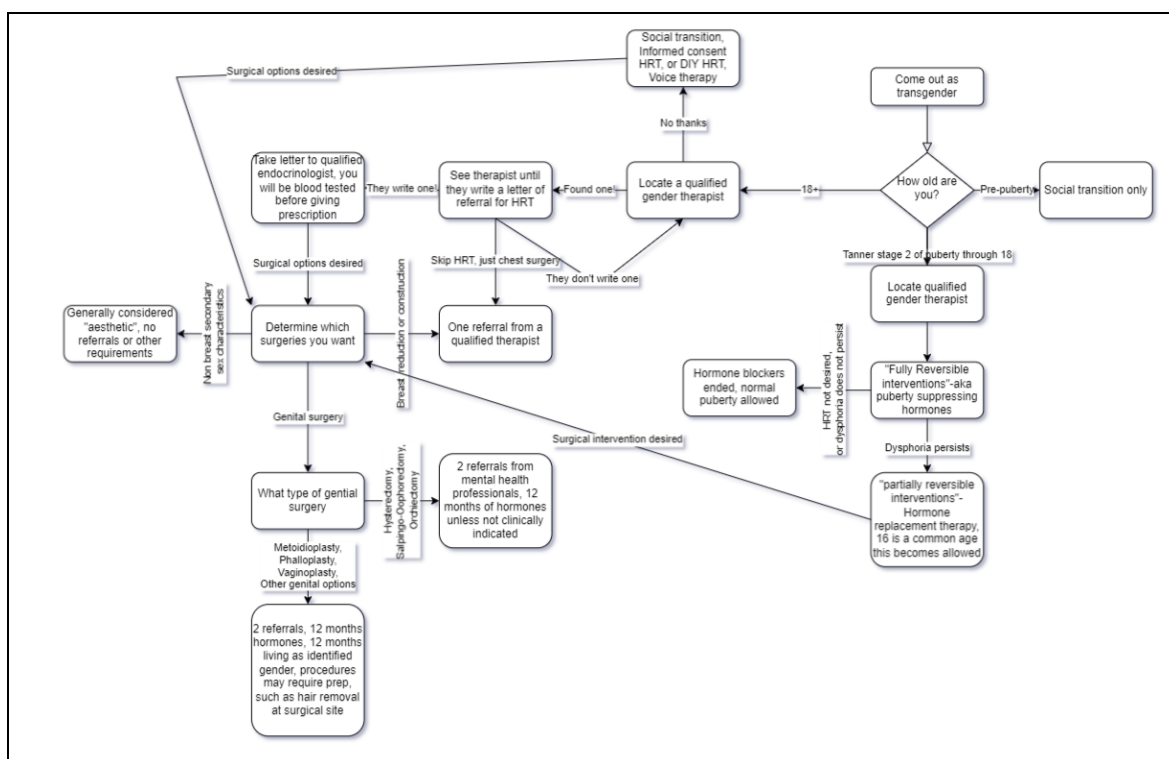
In late 2021, we realized that, surprisingly, despite the wide array of resources available online, it's difficult to find authoritative resources that allow a reader to start from a general base, and walk away with enough direction to start with their gender

affirmation journey, in one place, and that includes non-binary individuals as well.

So, starting in January of this year, many team members - Elapids, Moonbeam, Lilith (formerly Iggy), Catra, Caedwyn, and the team lead, Nix, combined their shared expertise, and worked over the span of many months to put together an important resource for people questioning their gender to understand tools and next steps available to them. While not all team members were able to stick with us the whole time, everyone above contributed in key ways. Thank you!

Most people on our team have been living and breathing the transition process themselves, including working with doctors and medical practitioners, so this information comes with the benefit of practical experience.

The team has put most of their efforts into the process of transition itself. They discuss many important considerations in HRT, and cover a wide variety of surgical procedures as well. Importantly, surgical information about transfeminine, transmasculine, and non-binary resources are collected in one place. The information is comprehensive, allowing the reader to be exposed to many



different concepts as a starting point to more research and discussions with their doctor.

For example, transfeminine surgical information includes discussion of several types of vaginoplasty, and covers pros and cons of each. Moreover, transfeminine surgical information includes other procedures such as facial feminization, and even shoulder-narrowing surgery, with some discussion of pros and cons throughout. Of course, this should not be perceived as being medical advice. The intent is to expose the reader to enough concepts and options to be able to make their own decision.

There are still more things we want to do, of course. The team wants to add additional details in several parts, flesh out some other important background information, add more images and diagrams, and maybe even list some doctors you can reach out to for more information. Nevertheless - this is a great starting point, that presents information many of us wish we had before we had started our own transition processes.

We hope you find this information helpful. Please let us know what you think! And, if you want to help expand our gender affirmation content, please let us know as well. Enjoy!

PS - Special thanks are due to Nix for carrying this over the finish line on time! Projects don't go over schedule when *they're* in charge. :3

[Presenting: Gender Affirmation Resources](#)

Checking in on the Enhanced Tail project

By Bleddyn and Zennith | September 24, 2022

The Enhanced Tail Project aims to develop a wearable prosthetic tail that can be intuitively controlled by muscle movements. Successful completion of this work will not only provide a novel tail prosthetic to those who desire freedom of form, but provide a basis in both

hardware and software for future research into permanent prosthetics that are a natural extension of a person's body.

The project deliverables include the following:

- A low-noise electromyographic (EMG) measurement system for sensing the wearer's intent;
- A tail control algorithm that takes muscle signals as input and provides motor control signals as output; and
- An existing mechanical tail, modified to use our motor control algorithm.

This has turned out to be more difficult than we expected...which, come to think of it, is *exactly* expected for a research project.

In our most recent website update several months ago (January 2022), we demonstrated that we were able to detect muscle activity in a test system (biceps muscle) using off-the-shelf components. At that time, we knew that the digital sampling rate of the muscle signal was too low and inconsistent. Since that time, thanks to excellent work by Mecknavorz, we resolved these issues. Our data recording software now has the ability to sample consistently and without errors at a minimum rate of 1024 Hz, a common standard for EMG data.

We've since discovered a separate issue that only arises with more realistic testing over a longer time window, and with the user moving around rather than standing still.

As it turns out, there's a very good reason that many electrical recordings you see in a medical environment - such as electrocardiograms - are done with the patient staying still. Patient movement causes large sources of electrical noise, both directly (in terms of interfering electrical signals) and indirectly (in terms of movements causing variance in the quality of electrode contact).

Several team members including Bleddyn, Sassales, and a new volunteer, Nalco, have taken a deep dive into the literature and new engineering approaches to solve the issue.

One might see this issue of electrical recording quality as a delay – but to the contrary (Zennith speaking here) – this is proof that we’re doing exactly the right type of research project. We’re not the first group to propose some type of mind-controlled tail, but no such prosthetics have made it out of the prototype stage. This might be a major reason why.

Our team has taken a fresh look at the engineering, and developed a new approach that appears likely to circumvent the issue in part through the use of active electrodes. The implementation of active electrodes will take on the order of 50 volunteer-hours of effort, including designing, assembling, and testing custom electronics.

To complement this hardware development, we’re proceeding with the development of software to visualize our EMG measurements in real-time. Our next software step is to start designing and testing an algorithmic means of determining tail-motion intent from EMG signals. Simultaneously, we’re continuing to refine our anatomical knowledge of target muscles that can give useful information when determining user intent to drive tail motion.

This is a key stage of the project, and we look forward to having news in a few months with our progress.

Thanks are due to our supporters on Patreon. The electronics we’ve purchased so far, as well as the electronics to be purchased for the next stage, are all possible thanks to you. Wish us luck and we’ll let you know how it goes!

Streamlined leadership for research

By Zennith | September 25, 2022

Earlier this month, we made some changes to our organizational structure, primarily with the intent of simplifying how research projects are planned and managed.

Until now, the Board of Directors had not delegated many of its powers, such as approving each new project plan and project-specific budget. While a strict Board authorization process might sound nice in theory, it was leading to rubberstamp votes, and harming the Board’s ability to carefully chart the longer-term direction of our organization. Furthermore, if and when project budgets change (such as has already occurred when the Enhanced Tail project), an additional Board authorization step adds unnecessary delay when our org’s finances can easily handle the modified project budget.

The challenges we face are long-term and highly interdisciplinary, which are exactly the sorts of things the Board needs to think about. On the other paw, specifics of execution are short-term and need input from specialists.

Our organization has attracted some amazing talent already. I especially want to call out Lathreas and Tiltwolf, who are not only great researchers, or capable managers and leaders, but they have a grasp of long-term technical needs that frequently surpasses my own. We need to have them in decision-making capacities, and remove unnecessary speedbumps.

To this end, we’ve decided to follow well-established precedent of how many organizations divide responsibilities between the Board and executives. Many (most?) organizations are led by a Board whose primary responsibilities are setting long-term strategy, and selecting a Chief Executive Officer (CEO) who is empowered to fulfill that strategy using all appropriate resources at their disposal, and accountable for its execution. Then, accountable to the CEO are other officers who are responsible for executing on portions of the Board-determined strategy. This setup, if done correctly, allows for an excellent flow of information between people, and the right types of decision-making and execution to be done by the right people at the right time.

I'm sure we can all name some interesting counter-examples of when things go wrong, but this goes to show that an organizational layout isn't a cure-all. An organization, at the most basic level, has to have the right people, and a leadership structure is just a tool.

In our case, the Board has voted to create a Chief Executive Officer position. Importantly, the CEO's appointment is at the pleasure of the Board, and can be stripped at any time, without notice, for any reason or no reason. This is an improvement over the previous leadership arrangement, where the President was automatically appointed to the top executive position "Chief Volunteer Officer" (CVO). This previous arrangement made it harder for the Board to hold the CVO accountable, even though so few powers were actually delegated to the CVO. (We had used a compliance contractor when first incorporating and writing our bylaws, and we took their default recommendations at first).

In a separate vote, the Board appointed yours truly to be the first CEO of the organization. I then happily set in motion a new arrangement of the research leadership that we've been preparing for several months, allowing for a better division of responsibilities. Tiltwolf is our new Chief Scientific Officer, Lathreas, our new Chief Technology Officer, and Syralth, our new Director of Research Operations.

Broadly speaking, Tiltwolf will be setting and supervising the scientific direction of our organization, and will be accountable for ensuring many individual research projects are successful. Lathreas will have similar, parallel responsibilities, though with a focus on systems engineering. Lathreas will be accountable for ensuring our set of ongoing research projects ultimately come together into an integrated whole. Finally, Syralth will focus on managing logistics and intellectual property policy. All of these activities collectively are needed to make sure we can grow and succeed in the long term.

On a personal note, I am comfortable taking on the role of CEO, and excited to give my very best to execute on the long-term goals of our organization. I've already been doing many of the key responsibilities. It should be a mostly easy transition, though there are still several things where I'm actively learning and stretching my abilities. We stress that if a better choice for CEO arises, we will go with them. We want our organization to succeed, and I personally recognize that I am both fallible and replaceable. Who is the best match to lead us? That is a big question that the Board has to constantly keep in mind, for as long as we have a mission to work towards.

I can't wait to see what our team does next, and I'm thrilled to be part of it.

Welcoming Split to our Outreach team

By Split | September 24, 2022



Image by SkunkZara

Heya, I'm Split! I'm a professional chess player and undergraduate student in data science. My other interests include studying game theory and hiking. I'm excited to be working with the outreach team for the Freedom of Form because I think bioengineering and transhumanism is super cool, and being a therian is an integral part of my identity!